

ECO₂FUMETM Fumigant Gas

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ECO₂FUMEä Fumigant Gas is a patented mixture of phosphine (2% by weight) in carbon dioxide. This cylinderized gaseous mixture is being tested for stored products and certain structural fumigations. A number of the applications of **ECO₂FUMEä** fumigant gas, are able to replace the need for methyl bromide applications. These include some applications to flour mills, food processing plants, commodities such as grain, tobacco, cocoa beans, coffee, grapes, and citrus.

Metal phosphide and methyl bromide fumigants need warmer temperatures to activate the gas. **ECO₂FUMEä** fumigant gas can be released at cold temperatures. This opens the possibility of its use on citrus, vegetables, and other cold storage commodities. These commodities are often imported under quarantine conditions. If imported fruits and vegetables don't need to be warmed to 3-5°C, the shelf life of the fruit could be extended by several valuable days.

ECO₂FUMEä fumigant gas major advantages:

1. It is not an ozone-depleting product
2. No disposal of undecomposed metal phosphide dust
3. Reduced risk to applicators
4. Non-flammable
5. A better penetrating gas than methyl bromide
6. Not temperature dependent
7. Lower emissions - Anticipated Clean Air Act requirements for phosphine air emissions will tighten in 1999

ECO₂FUMEä fumigant gas major disadvantages:

1. 175 lb cylinder to work with
2. Requires specialized equipment
3. Not labeled by EPA yet

Field Testing

This paper and two others from Oklahoma State University will discuss the results of field testing of **ECO₂FUMEä** fumigant gas under various conditions under its Environmental Protection Agency's Experimental Use Permit. This include:

1. **ECO₂FUMEä** fumigant gas vs. metal phosphide at 5°C and 20°C
2. Tobacco fumigation in five identical chambers vs. metal phosphides

3. Seed Warehouse Fumigations
4. Flour mill fumigations vs. methyl bromide
5. Citrus Fumigation at 2-40 C

Conclusion: *ECO₂FUME*™ fumigant gas offers an alternative to methyl bromide and metal phosphides for stored product protection.

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